Please provide the following information, and submit to the NOAA DM Plan Repository.

Reference to Master DM Plan (if applicable)

As stated in Section IV, Requirement 1.3, DM Plans may be hierarchical. If this DM Plan inherits provisions from a higher-level DM Plan already submitted to the Repository, then this more-specific Plan only needs to provide information that differs from what was provided in the Master DM Plan.

URL of higher-level DM Plan (if any) as submitted to DM Plan Repository:

1. General Description of Data to be Managed

   1.1. Name of the Data, data collection Project, or data-producing Program:
   2015 FEMA Lidar: Region 2 NY Great Lakes Area

   1.2. Summary description of the data:
   Aerial Cartographics of America (ACA) collected 2233 square miles in the New York counties of Chautauqua, Orleans, Wayne, Cayuga, Jefferson, Oswego and St. Lawrence. The nominal pulse spacing for this project was no greater than 0.7 meters. Dewberry used proprietary procedures to classify the LAS into an initial ground surface. Dewberry then used proprietary procedures to classify the LAS and performed manual classifications according to project specifications: 1-Unclassified, 2-Ground, 7-Noise, 9-Water, 10-Ignored Ground due to breakline proximity, 11- Witheld. The LiDAR data were processed to a bare-earth digital terrain model (DTM). Detailed breaklines and bare-earth Digital Elevation Models (DEMs) were produced for the project area. Deliverables were produced in NAD83 (2011) UTM Zone 18, meters and NAVD88 (geoid 12a), meters. The data was formatted according to the USNG Tile naming convention with each tile covering an area of 1,500 meters by 1,500 meters.

   The NOAA Office for Coastal Management (OCM) downloaded:

   2344 laz files from ftp://rockyftp.cr.usgs.gov/vdelivery/Datasets/Staged/Elevation/LPC/Projects/USGS_LPC_NY_GreatLakes_Phase2_L3_2014_LAS_2017/

   218 laz files from ftp://rockyftp.cr.usgs.gov/vdelivery/Datasets/Staged/Elevation/LPC/Projects/USGS_LPC_NY_FEMA_R2L1_ChautauquaCo_2014_LAS_2017/

   507 laz files from ftp://rockyftp.cr.usgs.gov/vdelivery/Datasets/Staged/Elevation/LPC/Projects/USGS_LPC_NY_FEMA_R2L2_OrleansCo_2014_LAS_2017/

   and processed the data to the Data Access Viewer (DAV) and https. OCM noted that along the Chautauqua and Orleans County shoreline, there are points that fall in Lake Erie and Lake Ontario that are classified as ground.

   Hydro breaklines are also available. These data are available for download at the link provided in the URL section of this metadata record. Please note that these products have not been reviewed by the NOAA Office for Coastal Management (OCM) and any

conclusions drawn from the analysis of this information are not the responsibility of NOAA or OCM.

1.3. Is this a one-time data collection, or an ongoing series of measurements?
One-time data collection

1.4. Actual or planned temporal coverage of the data:
2014-03-05 to 2014-03-24, 2014-10-27 to 2015-05-03, 2015-10-27

1.5. Actual or planned geographic coverage of the data:
W: -79.769207, E: -75.24983, N: 44.836563, S: 42.224863

1.6. Type(s) of data:
(e.g., digital numeric data, imagery, photographs, video, audio, database, tabular data, etc.)
Point Cloud (Digital)

1.7. Data collection method(s):
(e.g., satellite, airplane, unmanned aerial system, radar, weather station, moored buoy, research vessel, autonomous underwater vehicle, animal tagging, manual surveys, enforcement activities, numerical model, etc.)

1.8. If data are from a NOAA Observing System of Record, indicate name of system:

1.8.1. If data are from another observing system, please specify:

2. Point of Contact for this Data Management Plan (author or maintainer)

2.1. Name:
NOAA Office for Coastal Management (NOAA/OCM)

2.2. Title:
Metadata Contact

2.3. Affiliation or facility:
NOAA Office for Coastal Management (NOAA/OCM)

2.4. E-mail address:
coastal.info@noaa.gov

2.5. Phone number:
(843) 740-1202

3. Responsible Party for Data Management
Program Managers, or their designee, shall be responsible for assuring the proper management of the data produced by their Program. Please indicate the responsible party below.

3.1. Name:

3.2. Title:
Data Steward

4. Resources
Programs must identify resources within their own budget for managing the data they produce.

4.1. Have resources for management of these data been identified?

4.2. Approximate percentage of the budget for these data devoted to data management (specify percentage or "unknown"):

5. Data Lineage and Quality
NOAA has issued Information Quality Guidelines for ensuring and maximizing the quality, objectivity, utility, and integrity of information which it disseminates.

5.1. Processing workflow of the data from collection or acquisition to making it publicly accessible
(describe or provide URL of description):
Process Steps:

- Data for the New York Great Lakes LiDAR project was acquired by Aerial Cartographics of America, Inc. using a CESSNA TU206G aircraft. The project area included approximately 2233 contiguous square miles for New York. LiDAR sensor data was collected with the RIEGL LMS-Q680i LiDAR system and RIEGL LMS-Q780i LiDAR system. No imagery was requested or delivered. The calibrated data was processed to NAD83(2011) UTM 18, meters, NAVD88 (Geoid12A), meters. Deliverables for the project included a raw (unclassified) calibrated LiDAR point cloud, survey control, and a final control report. A preliminary RMSEz error check is performed at this stage of the project life cycle in the raw LiDAR dataset against GPS static and kinematic data and compared to RMSEz project specifications. The LiDAR data is examined in open, flat areas away from breaks. Lidar ground points for each flightline generated by an automatic classification routine are used. Overall the LiDAR data products collected by ACA meet or exceed the requirements set out in the Statement of Work. The quality control requirements of ACAs quality management program were adhered to throughout the acquisition stage fo this project to ensure product quality. LIDAR acquisition began on May 5, 2014 (julian day 125) and was completed on October 27, 2015 (julian day 300). A total of 28 survey missions were flown to complete the project. ACA utilized a CESSNA TU206G for the acquisition. The flight plan was flown as planned with no modifications. There were no unusual occurrences during the acquisition and the sensor performed within specifications. There were 455 flight lines required to complete the project. The initial step of calibration is to verify availability and status of all needed GPS and Laser data against field notes and compile any data if not complete.

 Subsequently the mission points are output, initially with default values from Riegl or the last mission calibrated for system. The initial point generation for each mission calibration is verified within Microstation/Terrascan for calibration errors. If a calibration error greater than specification is observed within the mission, the roll pitch and scanner scale corrections that need to be applied are calculated. The missions with the new calibration values are regenerated and validated internally once again to ensure quality. All missions are validated against the adjoining missions for relative vertical biases and collected GPS validation points for absolute vertical accuracy purposes. On a project level, a supplementary coverage check is carried out to ensure no data voids unreported by Field Operations are present. The initial points for each mission calibration are inspected for flight line errors, flight line overlap, slivers or gaps in the data, point data minimums, or issues with the LiDAR unit or GPS. Roll, pitch and scanner scale are optimized during the calibration process until the relative accuracy is met. Relative accuracy and internal quality are checked using at least 3 regularly spaced QC blocks in which points from all lines are loaded and inspected. Vertical differences between ground surfaces of each line are displayed. Color scale is adjusted so that errors greater than the specifications are flagged. Cross sections are visually inspected across each block to validate point to point, flightline to flightline and mission to mission agreement. For this project the specifications used are as follow: Relative accuracy < = 7cm RMSEZ within individual swaths and <=10 cm RMSEZ or within swath overlap (between adjacent swaths). UTM coordinate system, meters, zone 18, horizontal datum NAD83 (2011), vertical datum NAVD88, Geoid 12A

- 2015-12-01 00:00:00 - Dewberry utilizes a variety of software suites for inventory management, classification, and data processing. All LiDAR related processes begin by importing the data into the GeoCue task management software. The swath data is tiled according to project specifications (1,500 m x 1,500 m). The tiled data is then opened in Terrascan where Dewberry uses proprietary ground classification routines to remove any non-ground points and generate an accurate ground surface. The ground routine consists of three main parameters (building size, iteration angle, and iteration distance); by adjusting these parameters and running several iterations of this routine an initial ground surface is developed. The building size parameter sets a roaming window size. Each tile is loaded with neighboring points from adjacent tiles and the routine classifies the data section by section based on this roaming window size. The second most important parameter is the maximum terrain angle, which sets the highest allowed terrain angle within the model. Once the ground routine has been completed a manual quality control routine is done using hillshades, cross-sections, and profiles within the Terrasolid software suite. After this QC step, a peer review and supervisor manual inspection is completed on a percentage of the classified tiles based on the project size and variability of the terrain. After the ground classification corrections were completed, the dataset was processed through a water classification routine that utilizes breaklines compiled by Dewberry to automatically classify hydrographic features. The water classification routine selects ground points within the

breakline polygons and automatically classifies them as class 9, water. During this water classification routine, points that are within 0.3 meter of the hydrographic features are moved to class 10, an ignored ground due to breakline proximity. In addition to classes 1, 2, 9, and 10, there is a Class 7, noise points and Class 11, withheld . Class 7 was only used if needed when points could manually be identified as low/high points and class 11 points are points that contain a scan angle greater than 20 degrees.   The fully classified dataset is then processed through Dewberry's comprehensive quality control program.   The data was classified as follows: Class 1 = Unclassified. This class includes vegetation, buildings, noise etc. Class 2 = Ground Class 7= Noise Class 9 = Water Class 10=Ignored Class 11= Withheld   The LAS header information was verified to contain the following: Class (Integer) GPS Week Time (0.0001 seconds) Easting (0.003 m) Northing (0.003 m) Elevation (0. 003 m) Echo Number (Integer 1 to 4) Echo (Integer 1 to 4) Intensity (8 bit integer) Flight Line (Integer) Scan Angle (Integer degree)
- 2019-06-04 00:00:00 - The NOAA Office for Coastal Management (OCM) downloaded: 2344 laz files from ftp://rockyftp.cr.usgs.gov/vdelivery/Datasets/Staged/ Elevation/LPC/Projects/USGS_LPC_NY_GreatLakes_Phase2_L3_2014_LAS_2017/ 218 laz files from ftp://rockyftp.cr.usgs.gov/vdelivery/Datasets/Staged/Elevation/LPC/ Projects/USGS_LPC_NY_FEMA_R2L1_ChautauquaCo_2014_LAS_2017/ 507 laz files from ftp://rockyftp.cr.usgs.gov/vdelivery/Datasets/Staged/Elevation/LPC/Projects/ USGS_LPC_NY_FEMA_R2L2_OrleansCo_2014_LAS_2017/ The data were in UTM Zone 18 North (NAD83 2011) coordinates and NAVD88 (Geoid12A) elevations in meters. The data were classified as: 1 - Unclassified, 2 - Ground, 7 - Low Noise, 9 - Water, 10 - Ignored Ground, 11 - Withheld (Points with scan angles exceeding +/- 20 degrees). OCM processed all classifications of points to the Digital Coast Data Access Viewer (DAV). Classes available on the DAV are: 1, 2, 3, 7, 9, 10, 11. OCM noted that along the Chautauqua and Orleans County shoreline, there are points that fall in Lake Erie and Lake Ontario that are classified as ground. OCM performed the following processing on the data for Digital Coast storage and provisioning purposes: 1. The LAStools software scripts lasinfo and lasvalidate were run on the laz files to check for errors. 2. An internal OCM script was run to check the number of points by classification and by flight ID and the gps and intensity ranges. 3. Internal OCM scripts were run on the laz files to convert from orthometric (NAVD88) elevations to ellipsoid elevations using the Geoid 12A model, to convert from UTM Zone 18 North (NAD83 2011) coordinates in meters to geographic coordinates, to assign the geokeys, to sort the data by gps time and zip the data to database and to http.

5.1.1. If data at different stages of the workflow, or products derived from these data, are subject to a separate data management plan, provide reference to other plan:

5.2. Quality control procedures employed (describe or provide URL of description):

6. Data Documentation
The EDMC Data Documentation Procedural Directive requires that NOAA data be well documented, specifies the use of ISO 19115 and related standards for documentation of new data, and provides links to resources and tools for metadata creation and validation.

    6.1. Does metadata comply with EDMC Data Documentation directive?
        No

        6.1.1. If metadata are non-existent or non-compliant, please explain:
            Missing/invalid information:
            - 1.7. Data collection method(s)
            - 3.1. Responsible Party for Data Management
            - 4.1. Have resources for management of these data been identified?
            - 4.2. Approximate percentage of the budget for these data devoted to data management
            - 5.2. Quality control procedures employed
            - 7.1. Do these data comply with the Data Access directive?
            - 7.1.1. If data are not available or has limitations, has a Waiver been filed?
            - 7.1.2. If there are limitations to data access, describe how data are protected
            - 7.4. Approximate delay between data collection and dissemination
            - 8.1. Actual or planned long-term data archive location
            - 8.3. Approximate delay between data collection and submission to an archive facility
            - 8.4. How will the data be protected from accidental or malicious modification or deletion prior to receipt by the archive?

    6.2. Name of organization or facility providing metadata hosting:
        NMFS Office of Science and Technology

        6.2.1. If service is needed for metadata hosting, please indicate:

    6.3. URL of metadata folder or data catalog, if known:
        https://www.fisheries.noaa.gov/inport/item/56575

    6.4. Process for producing and maintaining metadata
    (describe or provide URL of description):
        Metadata produced and maintained in accordance with the NOAA Data Documentation Procedural Directive: https://nosc.noaa.gov/EDMC/DAARWG/docs/EDMC_PD-Data_Documentation_v1.pdf

7. Data Access
NAO 212-15 states that access to environmental data may only be restricted when distribution is explicitly limited by law, regulation, policy (such as those applicable to personally identifiable information or protected critical infrastructure information or proprietary trade information) or by security requirements. The EDMC Data Access Procedural Directive contains specific guidance, recommends the use of open-standard, interoperable, non-proprietary web services, provides

information about resources and tools to enable data access, and includes a Waiver to be submitted to justify any approach other than full, unrestricted public access.

7.1. Do these data comply with the Data Access directive?

7.1.1. If the data are not to be made available to the public at all, or with limitations, has a Waiver (Appendix A of Data Access directive) been filed?

7.1.2. If there are limitations to public data access, describe how data are protected from unauthorized access or disclosure:

7.2. Name of organization of facility providing data access:
NOAA Office for Coastal Management (NOAA/OCM)

7.2.1. If data hosting service is needed, please indicate:

7.2.2. URL of data access service, if known:
https://coast.noaa.gov/dataviewer/#/lidar/search/where:ID=8764
https://coast.noaa.gov/htdata/lidar3_z/geoid18/data/8764

7.3. Data access methods or services offered:
Data is available online for bulk and custom downloads.

7.4. Approximate delay between data collection and dissemination:

7.4.1. If delay is longer than latency of automated processing, indicate under what authority data access is delayed:

8. Data Preservation and Protection
The NOAA Procedure for Scientific Records Appraisal and Archive Approval describes how to identify, appraise and decide what scientific records are to be preserved in a NOAA archive.

8.1. Actual or planned long-term data archive location:
(Specify NCEI-MD, NCEI-CO, NCEI-NC, NCEI-MS, World Data Center (WDC) facility, Other, To Be Determined, Unable to Archive, or No Archiving Intended)

8.1.1. If World Data Center or Other, specify:

8.1.2. If To Be Determined, Unable to Archive or No Archiving Intended, explain:

8.2. Data storage facility prior to being sent to an archive facility (if any):

Office for Coastal Management - Charleston, SC

8.3. Approximate delay between data collection and submission to an archive facility:

8.4. How will the data be protected from accidental or malicious modification or deletion prior to receipt by the archive?
Discuss data back-up, disaster recovery/contingency planning, and off-site data storage relevant to the data collection

9. Additional Line Office or Staff Office Questions
Line and Staff Offices may extend this template by inserting additional questions in this section.